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ABSTRACT

Emphasis on the systematic evaluation of federally funded programs has steadily increased over the last several years. In response to this increased emphasis, a workshop was held in Eugene, Oregon, on April 12-14, 1977, to familiarize the directors and selected staff members from six Far West Teacher Corps Network projects with the program documentation and evaluation process developed by Dr. Robert Hammond at the University of Oregon. This monograph is based on the presentations and products of the Teacher Corps workshop. Each chapter focuses on a particular aspect of the documentation and evaluation process. Chapter One is concerned with the theoretical constructs underlying the process. In Chapter Two, solutions are presented for practical problems regarding the creation of program and documentation blueprints. In the next chapter, a step by step procedure is described which is designed to facilitate the generation of relevant and important evaluation questions. Finally, in Chapter Four, the authors describe the issues in the selection and/or development of data gathering instruments. (Author/GK)

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PROGRAM DOCUMENTATION AND EVALUATION

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PROGRAM DOCUMENTATION AND EVALUATION

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PREFACE

Emphasis on the systematic evaluation of federally funded programs has steadily increased over the last several years. In response to this increased emphasis, a two and one-half day workshop was held in Eugene, Oregon, on April 12-14th, 1977. The purpose of the workshop was to familiarize the directors and selected staff members from six Far West Teacher Corps Network projects with the program documentation and evaluation process developed by Dr. Robert Hammond at the University of Oregon. This monograph is based on the presentations and products of the Teacher Corps workshop.

Each chapter in the monograph focuses on a particular aspect of the documentation and evaluation process. Chapter one is concerned with the theoretical constructs underlying the process. In particular, the blueprint format which is used to guide documentation and evaluation is described. In Chapter Two, solutions are presented for practical problems regarding the creation of program and documentation blueprints. Two blueprints produced during the Teacher Corps workshop are used to illustrate the points made in Chapter Two. In the next chapter, Chapter Three, a step by step procedure is described which is designed to facilitate the generation of relevant and important evaluation questions. Finally, in Chapter Four, the authors describe the issues in the selection and/or development of data gathering instruments.

Sincere thanks go to Dr. Hammond, not only for the opportunity to be involved in the workshop and in the development of this

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I PRINCIPLES AND PROCEDURES OF DOCUMENTATION AND EVALUATION

Robert L. Hammond

Teacher Corps Projects are highly creative programs designed to fit the needs of specific populations within well-defined environments. The procedures for documenting and evaluating these programs must be systematic and well thought out. In Chapter I of this monograph two major topics are discussed. First, the author develops a set of principles and procedures for documentation. Second, a rationale is built for viewing evaluation as a process for making decisions about a program.

Principles and Procedures of Documentation

The process of documentation may best be described as the science of gathering information. Operationally, documentation includes the tasks of collecting, classifying, storing, retrieving, and disseminating recorded knowledge. In carrying out these tasks documentation serves the function of authenticating or substantiating a program as it is planned and implemented. More specifically, documentation of programs serves the Teacher Corps Project staff as a tool to: (1) generate specifications describing the program environment and population, and (2) gather information on behavior which will provide a range of responses toward the program specifications under investigation.

The process of generating a set of program specifications requires a detailed presentation of a plan or proposal. Such a plan should embody a description of the program environment or the circumstances, objects, and conditions surrounding the program population. The program population is the total set of individuals involved in the program. The set of specifications, in the form of a program plan, should provide the participants, project staff, and director with a clear and precise blueprint of what is to take place, how it is to take place, and the resources necessary for making things happen in the project.

In this context, the term blueprint takes on a very special meaning. A blueprint is an organizational tool used to lay out program specifications. It is constructed around two sets of elements, a population set and an environmental set.

The population set describes people grouped according to their roles within the program. There are three population subsets or elements in any program, namely, clients, staff, and management. The clients are those members of the program designated as recipients of the benefits intended to occur as a result of the

program. The staff are those persons given the responsibility for defining and following courses of action leading to the accomplishment of program intents. Those persons given the responsibility of directing courses of action leading to the accomplishment of program intents are the management. An example of a program population set from a Teacher Corps project in Pasco, Washington, follows:

Clients: The parents of children in McLoughlin and Stevens Junior High Schools in Pasco, Washington.

Staff: Those persons (community coordinator, community liaison coordinator, Washington State University coordinator, four interns, and team leader) given the responsibility for planning and implementing the Community Center activities and programs.

Management: The site coordinator who is given the responsibility for directing and documenting the activities and programs of the community component.

The program environment set contains elements which provide the context for action on the part of the program population. The environment is made up of three elements: intents, methods, and resources. Intents are the program's stated purposes, goals, or objectives. The methods are those courses of action selected from among alternatives, under given conditions, to achieve program intents. Resources are the human, material, and time specifications created and organized for the purpose of implementing the program methods which in turn are designed to achieve the program intents.

Examples of client intents, methods, and resources are as follows:

Intents: Given the opportunity to participate in the Community Center (Matrix Building) programs and activities, the parents of the community will participate in school activities as demonstrated by (1) visitations with teachers, (2) discussions with teachers regarding the needs of their children, and (3) involvement in school functions.

Methods: Parents will participate in (1) programs involving seminars and workshops in self-awareness; (2) Community Center activities such as (a) student plays, athletic events, and dinners and (b) volunteer tutor programs; and (3) meetings on school involvement and attitudes toward the school.

Resources: Human — (1) community coordinator, (2) community liaison coordinator, (3) four interns, (4) team leader, (5) Washington State University consultant, and (6) par-

ents of students.
Time — (1) two hours per month for workshops, (2) one-half hour per month per parent for interviews, and (3) two hours per month for school activities.
Material — (1) books on various topics (e.g., how to work with your child, multi-cultural themes), (2) photocopied handouts, and (3) Matrix Building for meetings.

With both the population and environmental sets defined, the task now becomes one of combining these two sets of elements to create a blueprint that displays the program specifications in a readable and useful form. The blueprint, when completed, must provide answers to the following questions:

1. Who are the recipients of the benefits intended to occur as a result of the program?
2. Who is responsible for defining and following courses of action leading to the accomplishment of program intents?
3. Who is responsible for directing and managing courses of action designed to achieve program intents?
4. What are the defined intents (i.e., purposes, goals, or objectives) of the program for the client, staff, and management?
5. What are the defined courses of action selected from alternatives, in light of given conditions, designed to achieve the intents of the program for client, staff, and management?
6. What are the human, time, and material specifications for client, staff, and management created to implement the methods designed to achieve the intents of the program?

Facet theory is used to order the two sets of elements since the blueprint must be systematic in its presentation of the program. Therefore, the population and environmental sets are now referred to as facets. Facet theory offers formal methods for the definition of the universe of program content based on the principles of set theory. There are two basic steps in facet design: (1) definition of the basic sets of elements called facets, and (2) definition of a new set of elements which is the cartesian product of the elements of the facets. Each element of the new set is a combination of two facet elements, one from each set, and is called an attribute, subuniverse, or variable (Elizur, 1970).

The elements of the population (P) and environment (E) facets are arranged in the following order:

$$P = \begin{matrix} p_1 \text{ Client} \\ p_2 \text{ Staff} \\ p_3 \text{ Management} \end{matrix} \qquad E = \begin{matrix} e_1 \text{ Intents} \\ e_2 \text{ Methods} \\ e_3 \text{ Resources.} \end{matrix}$$

> According to facet theory, the order of the elements in a facet is important in itself. For example, the order of husband-wife is not the same as wife-husband. In this case the order has a meaning, as the two elements are distinguished by the role they play. Therefore, the order (a_1-a_2) is not necessarily the same as (a_2-a_1). (Elizur, 1970, p. 50)

The three elements in the population facet have been ordered, p_1 comes before p_2, and p_2 comes before p_3 ($p_1 < p_2 < p_3$). This ordering is based on the interdependence of the elements within the facet. Programs are designed to meet the needs of clients. Thus, the client (p_1) is represented as first in the order of priority. The client is scheduled for more frequent contact with staff than with management thus creating the order, staff then management.

The intents of the program provide statements as to the program outcomes. Once the outcomes have been defined, it is then possible to describe the methods for achieving the program intents. With the methods defined, resources may be allocated to implement the methods for achieving the outcomes. The natural interdependence of each environment element on the other establishes their order as $e_1 < e_2 < e_3$.

After the facets have been defined and the order of their elements specified, a new set of elements may be produced by combining the population (P) facet and the environmental (E) facet in a three by three matrix (See Figure 1.1). The three by three matrix provides a logical format for a blueprint of program specifications.

Figure 1.1: Three by three matrix (blueprint format)

	Client (p_1)	Staff (p_2)	Management (p_3)
Intents (e_1)	Client Intents p_1e_1	Staff Intents p_2e_1	Management Intents p_3e_1
Methods (e_2)	Client Methods p_1e_2	Staff Methods p_2e_2	Management Methods p_3e_2
Resources (e_3)	Client Resources p_1e_3	Staff Resources p_2e_3	Management Resources p_3e_3

Each of the cells of the matrix has a positional relationship and is interdependent on all other cells. The interdependence focuses on the cell in the upper left-hand corner of the matrix referred to as Client Intents. Assume for a moment that the matrix is a square. By rotating the matrix to form a diamond we have what is called a program universe (See Figure 1.2) with sub-universes (matrix cells) displaying their interdependence and relationship to each other by the arrows drawn.

According to the rationale for ordering, displayed in the program universe, the ability of the client to achieve the program intents is directly and most closely related to client methods and staff intents. Similar relationships can be established for all cells in the universe.

Figure 1.2: Program universe

Creating the blueprint format achieves the first purpose of documentation, that is, to provide Teacher Corps Project staff with a tool with which to generate a set of specifications describing the program environment and population. Figure 1.3 is an example of such a set of specifications developed by the Portland, Oregon, Teacher Corps Project (see Appendix, page 54).

The blueprint illustrated in Figure 1.3 is a set of written specifications describing actions to be taken by people. When people begin to act, their actions require documentation to determine if the program is functioning as intended. As a result of the documentation process, those responsible for the program are able to make decisions to modify, terminate, recycle, or maintain program activities to insure the program's success.

With the first purpose for documentation satisfied, the second purpose of the process may be considered (i.e., "gathering of information on observed behavior that provides a range of responses toward the program specifications under investigation."). The rationale for the study of behavior is established by the interdependence of people and their environment as described by Kurt Lewin. He says:

> In principal it is everywhere accepted that behavior (B) is a function of the person (P) and environment (E), B=f (P,E), and (P) and (E) in this formula are interdependent variables. (Lewin, 1951, p.25)

With the program universe defined, the rationale for the study of behaviors within the subuniverses established, and the relationships between subuniverses described, the next step is to define the behavior facet (B) to be used in combination with the facets of population (P) and environment (E).

The behavior facet is comprised of two elements arranged in the following way:

$$B = \begin{matrix} b_1 \text{ Opinion} \\ b_2 \text{ Performance} \end{matrix}$$

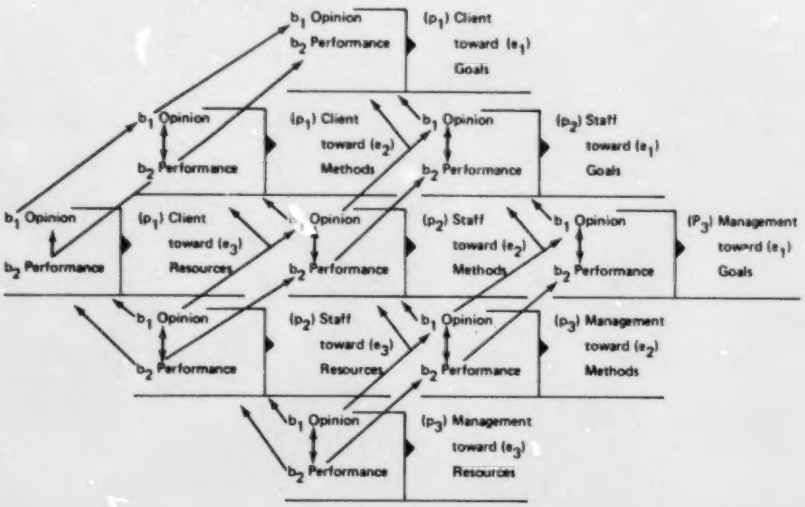
Opinions (b_1) are one's judgments representing valuations and beliefs. Valuations are judgments of what "ought to have been," while beliefs are judgments of "what is" or "what was" (Myrdal, 1958). Performance (b_2) is defined in terms of goal related action (the extent to which the intents, methods, and resources were responded to, implemented, or utilized).

Having defined the behavior facet, we can now lay out the three facets as follows:

$$\text{The} \begin{cases} b_1 \text{ Opinion} \\ b_2 \text{ Performance} \end{cases} \text{ of } \begin{cases} p_1 \text{ Client} \\ p_2 \text{ Staff} \\ p_3 \text{ Management} \end{cases} \text{ toward } \begin{cases} e_1 \text{ Intents} \\ e_2 \text{ Methods} \\ e_3 \text{ Resources.} \end{cases}$$

The elements of these three facets may be combined into a program universe depicted by the three-dimensional structure shown in Figure 1.4.

Figure 1.4: Universe of behavior of the population toward the program specifications


b_1 Opinion
b_2 Performance
(p_1) Client toward (e_1) Goals
(p_1) Client toward (e_2) Methods
(p_2) Staff toward (e_1) Goals
(p_1) Client toward (e_3) Resources
(p_2) Staff toward (e_2) Methods
(P_3) Management toward (e_1) Goals
(p_2) Staff toward (e_3) Resources
(p_3) Management toward (e_2) Methods
(p_3) Management toward (e_3) Resources

Given the universe of behavior which may be examined and a need for documentation, the task now becomes one of determining what behavior shall be examined. In most instances, the process of documentation focuses on client intents. However, it this is the only focus then little if any information is available as to why the outcomes did or did not meet the expectations stated by the goals and objectives. A well-balanced program for documenting behavior relative to each of the nine cells of the blueprint in Figure 1.3 is essential to a complete understanding of how well the project is functioning. In establishing a well-balanced documentation process, one creates a systematic decision-making process for evaluating project activities and products.

A Rationale for Evaluation as a Process for Making Decisions

The impetus for documenting behavior comes from established needs for information. A need for information is created by the identification of program decision situations to be served. By combining the three facets (behavior, population, and environment) and their elements as shown in Figure 1.4, a set of decision situations and their related decisions questions may be formulated. For

example, the decision situation inherent in the apex cell of Figure 1.4 is the extent to which client intents were achieved. There are two decision questions related to this situation as specified by the behaviors listed in Figure 1.4. These questions are, what is the performance of the client regarding client intents and what is the opinion of the client regarding the achievements of client intents? Each cell in the program universe has inherent in it similar decision situations and decision questions. Once it is determined which decision situations are to be served by documentation and evaluation, plans for gathering information may be formulated. Based on the information gathered relative to each decision question, decisions may be made as to the success or worth of the program specification under investigation. An example of a documentation blueprint designed to guide the collection of information relative to the decision situations to be served is discussed in Chapter II of this monograph.

Given the decision situations to be served by documentation and evaluation and their related decision questions, the next step in the process is to specify the criteria and criteria questions which will guide documentation and evaluation. Chapter III of this monograph is devoted to a detailed description of questions and criteria so no attempt will be made to discuss them here. Chapter IV deals specifically with the development and use of instruments for gathering information relative to each criterion question.

Once data collection has been completed, the next step in the process is the choice of the decision alternative consistent with the facts. This step includes the development of decision rules. The choice of decision alternatives should be based on pre-determined decision rules. The final step in the documentation and evaluation process is to act upon the chosen alternative and document the actions taken.

Summary

Chapter I of this monograph has provided the reader with a systematic approach to documentation and evaluation.

Briefly stated this approach is as follows:

1. Define the program population set including clients, staff, and management.
2. Define the program environment set including intents, methods, and resources.
3. Combine through facet design the population and environment sets' elements to create a program blueprint.
4. Document the anticipated outcomes of the program by describing the specifications inherent within each cell of the blueprint.
5. Define the behavior set to be examined including opinions and performance.

6. Combine the behaviors to be examined with the population and environment sets to generate decision situations and questions for evaluation and decision making.
7. Identify criteria and criterion questions to be used in judging the decision alternatives.
8. Collect and report information relative to each decision situation to be served by the documentation and evaluation process.
9. Choose among the decision alternatives.
10. Act upon the chosen alternative and document actions taken.

II THEORY INTO PRACTICE: DEVELOPING PROGRAM AND DOCUMENTATION BLUEPRINTS

Peter J. Gray

Many times an article, text, or monograph will stop at the theoretical level leaving the reader with the question, where do I go from here? The purpose of this chapter is to provide some specific examples of how program developers have dealt with the concepts described in Chapter I.

During a two and one-half day workshop, teams from six western Teacher Corps Network projects went through a four phase process in order to develop a documentation plan for their respective projects. This chapter will focus on the problems the participants encountered and their subsequent solutions to those problems relative to the first two phases of the process, namely, the development of a program blueprint and a documentation blueprint.

Developing a Program Blueprint

The first step in developing a program blueprint was to clearly define the elements in the population set, the client, staff, and management. Three problems often arose as the project teams began this process. First, most projects had more than one part and often the definitions for client, staff, and management changed from one part to the next. Second, overlap of people from one definition to another caused confusion. Third, the staff and/or clients were usually the most obvious population element and defining the remaining element(s) was a task new to the project teams. Figure 2.1 will be used to illustrate one team's solutions to these problems. (See Appendix, page 55.)

In order to clarify and simplify the process of defining the important people in their project, the team from the University of Hawaii at Manoa decided to focus primarily on one part of their project. As shown in Figure 2.1 their blueprint concerned "a program designed to develop interpersonal and teaching skills in enhancing multicultural relationships." This is a good example of the level of specificity appropriate for a blueprint. By concentrating on this one program, the Hawaii team was able to clearly specify the population elements, thus facilitating the defining of client, staff, and management.

Of course, a blueprint could focus on an entire project with all of its related programs, but this level of generality is most often appropriate only at the initial planning stage in order to provide an overview of a proposed project. At the program development and implementation stage, blueprints should be developed for each program. They should be general enough to include an entire program, without losing focus, and specific enough to provide direction, without getting bogged down in details. The blueprint of the Hawaii program obtains this balance.

Once a clear idea of the program to be described was formulated, the following definitions for clients, staff, and management were stipulated:

Clients: Grade 7-9 teachers, interns, parents and community persons, and educational assistants of Jarrett Intermediate School who voluntarily participate in multicultural workshops, courses and activities designed to develop interpersonal and teaching skills in enhancing multicultural relationships.

Staff: Those individuals — Team Leader, Program Development Specialist, Community Coordinator, Inservice Coordinator, Project Director — given the responsibility for planning and conducting appropriate workshops, courses and activities designed to develop interpersonal and teaching skills in enhancing multicultural relationships.

Management: The Team Leader, Community Coordinator, Inservice Coordinator, Program Development Specialist, and Project Director who are given the responsibility for developing the program in general, selecting instructional personnel and handling the logistics necessary to carry out the program. The Project Director is given the responsibility for developing the budget and handling other administrative tasks.

With a precise statement of the population elements made, the problem of whether people fall under more than one element is resolved naturally. For example, in the definitions just cited, there are a number of people who are both part of the staff and management, like the Project Director, Team Leader, Community Coordinator, and so on. The purpose of the definitions is to identify in general the types of people most closely associated with each population element. A more specific list of the people who will be involved in the actual implementation of each aspect of a program is described relative to the topic, human resources.

Defining the three population elements is often a difficult task. The staff definition is usually the most easily arrived at, since this group usually does the planning and is the first to be identified during the program planning stage. The clients are sometimes easily defined if the proposal generation process calls for a client oriented problem statement and if the strategies designed to remedy the clients' problem are to be specified. It is important to remember that the clients are those people who are to derive the benefits of the proposed program. The management definition is usually the hardest to arrive at, since many of the same people are involved in both staff and management activities. In addition, management activities are sometimes considered to be tangential to the real job of developing and implementing a program. However, to insure that the administrative and supervisory aspects of a program are carried out and documented, these responsibilities should be included in a management definition like that in Figure 2.1.

The definitions of the environment set elements were stipulated in the first chapter as follows:

Intents: Statements representing the ends toward which Client, Staff, and Management are directed.

Methods: Statements representing courses of action established to achieve program intents.

Resources: Those Human, Time, and Material resources required to implement the methods designed to attain the intents of the program.

The combination of the population and environment set elements provides the direction for specifying the contents of each cell in the blueprint. In the following discussion, each row of cells will be considered separately, since they each have special characteristics. The intents or goals for the clients, staff, and management more specifically spell out each group's responsibilities. This is illustrated by the following example of client intents:

Given the opportunity to participate in courses, workshops and activities designed to develop interpersonal and teaching skills

needed to enhance multicultural relationships, the clients will: 1) increase personal awareness; 2) be able to analyze interpersonal relationships; 3) become familiar with a range of teaching/learning strategies.

It is generally helpful to state the intents of the program in terms of givens and then to describe the general outcomes that are expected relative to each group of people. The most important characteristics to strive for in stating intents are conceptual clarity and comprehensiveness; that is, the meaning of the intents should be understandable by all those associated with the program and the intents should encompass all relevant outcomes. The anticipated outcomes of a program may justifiably include the accomplishment of abstract, unobservable states of being such as awareness and familiarity; therefore, there is no need for concrete, observable, behaviorally stated objectives at this point as long as the meaning of the concepts used is clear.

Problems which arise in regard to the description of the methods to be utilized by each group in accomplishing its intents often concern the appropriate format to be used. The methods may be thought of as enabling statements. As such there are two appropriate formats. One is the direct statement of methods as shown in the management methods in Figure 2.1.

The management will:

1.0 contact resource person(s),
2.0 arrange orientation/information meetings,
3.0 determine human, time, and material needs,
4.0 oversee the development and implementation of courses of action designed to achieve the client intents,
5.0 develop a program budget,
6.0 direct and manage the development of a client evaluation plan,
7.0 develop and implement a program documentation and decision plan.

Another format which may be used in stating methods is illustrated by the client methods in Figure 2.1. Here a general statement of what the client will do appears first (e.g., teachers, interns, educational assistants, parents and community personnel will participate in workshops, courses, and activities designed and carried out to achieve the following objectives). Then, this statement is given substance by listing the objectives to be achieved via the workshops, etc. The first set of objectives shown in Figure 2.1 are as follows:

1.0 Develop an understanding of:
    1.1 culture as a process,
    1.2 the client-self,
    1.3 the student-self,
    1.4 culture and teaching/learning problems,
    1.5 culture and classroom problems.

Either format may be used as long as it provides meaningful

information to those involved in the program.

One of the major contributions to implementation and documentation provided by a program blueprint is that it furnishes a directory for locating the operational components of the program. The establishment of a program file containing the details of the program is facilitated by designating a detail code on the program blueprint. For example, in Figure 2.1, Detail 1 is referred to regarding the set of objectives under client methods. This detail would contain the instructional plans of the workshops, courses, and activities designed to achieve these objectives. The plans would be placed in the program file and in that way provide documentation of the proposed behaviors of the client which could later be compared against the actual behaviors of the client. The information in the detail file provides the basis for judging the worth of this program component.

The combination of the resource element of the environment set and the population elements produces three lists of resources to be utilized in the implementation of each group's methods: human, time, and material. The problems that arise relative to these cells in the blueprint may be stated in the form of four questions, as follows: 1) human — who should be included?; 2) human — what about the overlap of responsibility?; 3) time — should blocks of time be large or small?; 4) material — how specific should the list of materials be?

It is important to include in the list of human resources everyone who is to be involved in the implementation of each group's methods. This will insure that information is collected on each person so that his or her contribution to the success of the program may be evaluated. For example, in order to accomplish the client intents shown in Figure 2.1, the following people will be used to implement the client methods:

1.0 A minimum of 20 clients from the Jarrett School including:
- 1.1 voluntary teachers
- 1.2 administrators
- 1.3 educational assistants
- 1.4 interns
- 1.5 parents
- 1.6 other community persons.

2.0 The following staff members:
- 2.1 team leader
- 2.2 inservice coordinator

and so on. The human resources for the staff and management are similarly specified. It is logical that some of those people who are responsible for the utilization of client methods will be those who helped develop these methods as part of their staff responsibility. Therefore, overlap of human resources from one population element to another is to be expected.

The specification of time resources should be tailored to fit the needs of the program. Some programs such as the one shown in Figure 2.1 allocate time in large blocks, e.g., workshop time, follow-up time, and staff classroom observation time.

This program describes, for example, four two-hour sessions, monthly for four months, as the amount of workshop time to be used. Other programs indicate time allotment in terms of full-time equivalents (FTE). In this case, the project director might allocate .20 FTE to implementing client methods and .40 FTE each to staff and management methods. The time allotment of each person listed under human resources could be listed under time resources, thus providing a quantitative measure against which a person's actual contribution to a program component could be compared.

The list of material resources for each group should be specific enough to provide a comprehensive inventory. But, it need not go into details. This should be left for documents placed in the program file. The most general way to supply information on material resources is to simply state "budget" and then include the budget document as a detail.

A clearer way to communicate material needs is to list them in general. Instructional and consultative services, curriculum materials, office supplies, travel, postage, telephone, equipment, and so on, are the usual types of material resources listed. An interesting material resource included under client resources in Figure 2.1 is that of "incentives":

1.1 university credit to be assumed by program,
1.2 certification requirement completion,
1.3 movement on pay scale,
1.4 released time from teaching,
1.5 improved classroom management skills.

If the cells of the program blueprint are filled in with statements that are meaningful to the program developers, then the documentation procedures to be described next will provide them with worthwhile information with which to determine the success of their program.

Developing a Documentation Blueprint

Phase two of the documentation process is the development of a documentation blueprint. As in the program blueprint, the intents, methods, and resources of the client, staff, and management make up the environment and population sets, respectively. Their combination provides direction for specifying the content of each cell in the matrix.

The unique character of the documentation blueprint stems primarily from the client intent which is invariably to make a decision about some aspect of the program. Therefore, the entire documentation blueprint focuses on the decision making process. This process was briefly described in Chapter I. The purpose of the following discussion is to provide an illustrative example of how one team gave substance to the general process previously described.

Many of the same problems and questions arose in the development of the documentation blueprint as were discussed regarding the program blueprint. Therefore, this section will concentrate on a more straightforward explanation of the special characteristics of each row of cells in the blueprint as illustrated by Figure 2.2 (see Appendix, page 56). This documentation blueprint is based on one developed by the Teacher Corps Youth Advocacy Program team from Arizona State University.

In developing a documentation blueprint, people often have a very difficult time specifying each population elements' definition since these roles have not usually been considered up to this point. The client definition is the most difficult one. This definition describes those persons given the responsibility for making some decision about the program. The definition may describe a person or persons at the local, district, state, or national level depending on the nature of the program and the nature of the decision. In Figure 2.2, two people at the national level form the documentation clientele (i.e., the Teacher Corps Youth Advocacy Project Director and Program Specialist).

With this clientele in mind, we move to the staff and management definitions. The documentation staff includes those people responsible for putting together the documentation report(s) that the client will use to make decisions. In Figure 2.2, the staff consists of the Teacher Corps staff who aid in the completion of the preliminary documentation reports and the Administrative Assistant who is solely responsible for providing the client with the final documentation report.

The management definition specifies who oversees the entire documentation process. In the case of our example, the Administrative Assistant also has this responsibility. As was described in Chapter I, the flow of the blueprint is from management to staff to client. The management is responsible for organizing the resources and activities designed to facilitate the staff's implementation of the documentation process which will in turn provide the client with the information needed to make decisions.

The client is the ultimate consumer of the fruits of the documentation process. Therefore, the rest of this discussion will focus on this population element's intents, methods, and resources. The staff and management cells will be highlighted to show their supportive relationship to the client. It should be noted that the definitions for the environment elements are the same as in the program blueprint.

The client intents specify the decision situation(s) to be served by the documentation process and the decision alternative(s) faced by the client. As shown in Figure 2.2, these statements are set in a given situation as follows:

> Given the documentation reports for the Teacher Corps Youth Advocacy Program at Arizona State University designed to document various program components, the Program Specialist and/or Director will make decisions:

1.0 as to the degree to which the program objectives for the project were met,
2.0 to maintain, revise, or terminate the project, as demonstrated by documentation of decisions made and actions taken based on the findings of the documentation reports.

"The degree to which the program objectives for the project are met, " is an example of a very broad decision situation. Under client methods, the first step is to develop a design for serving the decision situation. This involves specifying and placing in Detail A the list of individual decision situations to be documented. All decisions may be related to a program's client objectives (i.e., intents) if this is the only concern of the decision makers. On the other hand, a variety of decision situations may be specified as shown in Chapter 1 (see Figure 1.4) if many cells of the program blueprint are to be documented.

The decision alternatives open to the decision makers (documentation clients), "to maintain, revise, or terminate the project," are precise and clear. This statement becomes part of the design for serving the decision situation under client methods, 1.2 (see Figure 2.2).

Once the decision making authority has been specified, the remaining aspects of client method 1.0 may be attended to. In Figure 2.2 the client methods regarding the establishment of criteria and decision rules are tied to management methods 6.0 and 7.0. In other cases it might be the client's responsibility alone to establish those criteria and rules. Alternatively, a third party evaluator might step in at this point and provide consultative services to the client in carrying out these methods. Whatever procedure is used, the results should be placed in their own separate files under Details B and C. In Chapter III, the establishment of decision situations and their related questions and criteria are discussed in detail.

Along with the criteria and decision rules, a time table for reviewing the documentation report and making decisions should be established and placed in the documentation file. The time line should lay out the process described under client method 2.0 as follows:

2.0 Choose the decision alternative using the following process: (1) obtain relevant reports (see Staff Detail 6), (2) use criteria to rate information regarding the degree to which the program objectives were reached (see Detail B), (3) apply the decision rules (see Detail C), (4) reflect on the validity of the indicated choice, (5) confirm indicated choice and terminate the decision making process or reject the initial choice and recycle the decision making process.

Implementing this process will result in the accomplishment of the last part of the client intent, "documentation of decisions made and

actions taken based on the findings of the final documentation report." The documentation of decisions made and actions taken should be filed under Detail E .

As the reader can see from observing Figure 2.2, the staff and management methods are designed to ultimately provide the client with the documentation report to be used in making decisions. The staff methods specify the actions to be taken by Teacher Corps staff to assist in completing the documentation report. They also lay out the steps to be taken by the Administrative Assistant in actually preparing the final documentation report. All the information generated by these methods should be placed in the documentation file under the appropriate details (see Figure 2.2).

The actual decision making process is managed by the Administrative Assistant as described under management methods. Through the establishment and maintenance of a Management Information System, the Administrative Assistant will create the basic framework for storing and retrieving information. In addition s/he will manage the documentation procedure of the staff and insure that the documentation report is submitted on time.

As mentioned previously, some of the client methods require working with management. It is management's responsibility to meet with the Project Director and/or Project Coordinator to establish criteria and decision rules to be used in choosing among alternatives. The management will also document the decisions made and actions taken by the client based on the time table that they have both agreed to. All of these methods are specific to the Teacher Corps Youth Advocacy Project and the reader is encouraged to modify them as necessary to meet the needs of his or her own program.

The resource cells in the documentation blueprint are very similar in format to those in the program blueprint. This is especially true for human resources which simply provides a list of people used to implement each set of methods. Time resources are typically specified by reference to the timeline established for implementing the methods (e.g., "decision making time table" or "data collection schedules"). These timelines should be placed in the appropriate detail folder. Of course, it may be helpful to use the FTE method of time allocation. This is especially important for people who have to split their time among various parts of the documentation process and various parts of the program as well.

Under material resources should be listed all those tangible things needed to carry out the documentation process. Although the actual writing of reports, including the issues of style, format, and so on, will not be discussed in this monograph, it is important to remember that graphics and illustrations and the final binding of the report are material resources that should be included in the documentation plan. It may be a worthwhile expenditure to contract with one's local public information office to provide technical assistance in the above areas so that the final documentation report is professionally tailored to meet the needs of the client decision makers.

In summary, the practical aspects of developing program and

documentation blueprints have been described. The program blueprint, constructed through the combination of population and environment set elements, provides a description of the substantive aspects of a program. The documentation blueprint, constructed in the same manner as the program blueprint, has as its focus the decision or decisions to be reached by the documentation client regarding one or more of the substantive aspects of the program.

Once the general outline of the documentation and evaluation process has been put into blueprint form as shown in Figure 2.2, the next step is to carry out the documentation methods. In Chapter III, the third phase of the process will be described. This phase includes the generation of questions and criteria which provide the focus for the documentation and evaluation of actual program outcomes.

III FROM BLUEPRINT TO INSTRUMENTATION —THE DEVELOPMENT OF QUESTIONS AND CRITERIA

Randall Draper

The program blueprint is the basis for documentation. The blueprint delineates program goals and objectives and outlines those decision situations from which the rest of the documentation proceeds. Without a comprehensive blueprint, the wrong questions about the wrong things will probably be asked; with it, one is ready to move on to the next phase in program documentation and evaluation, the development of questions and criteria.

Given the complexity of most programs and the wealth of information available to the documentor, the task of deciding what behavior to document is difficult, but critical to the success of the evaluation.

This chapter offers a logical and systematic way of determining those questions and criteria which will lead to instrumentation. Specifically, the chapter presents a step by step process for developing and using decision questions, criteria, and criterion questions.

The development of questions and criteria is an extension of those concepts which led to the development of the program universe. In effect, if behavior is the result of the interaction of a population with its environment, then it is logical to ask, what specific behavior can be observed in each individual decision situation for documentation purposes? Moreover, once a particular behavior is identified, what

then can be used to judge the extent to which that behavior has facilitated program specifications such as client intents, staff methods and so on.

The process used to generate questions and criteria is called PBEC which stands for Population, Behavior, Environment, and Criterion. Decision questions are developed by identifying the population (P), behavior (B), and environment (E) of a decision situation, and reorganizing these elements into question form. Criteria (C) are generated for each specific decision question. Subsequently, criterion questions are constructed by adding an individual criterion (C) to the elements of a decision question (PBE), thus identifying a relevant point of inquiry. This criterion question (PBEC) is the primary focus of documentation and evaluation.

This chapter will guide the reader through each of the following steps, from blueprint to instrumentation:

1. Review of the blueprint,
2. Definition of all important terms,
3. Identification of decision situations,
4. Development of decision questions,
5. Prioritization of decision questions,
6. Generation of the criteria,
7. Prioritization of the criteria,
8. Development of criterion questions,
9. Prioritization of criterion questions.

The examples used in the following discussion are from a blueprint developed for a Far West Teacher Corps project entitled, "A Program to Provide a Pluralistic Community a Functional Role in the Improvement of their Schools." Assuming that it is the most important part of any program, the following client intent was chosen as the primary example to be used in this chapter:

> Given the opportunity to participate in the Community Center programs and activities, the parents of the community will participate in school activities as demonstrated by 1) visitations with teachers, 2) discussions with the teachers regarding the needs of their children, and 3) involvement in school functions.

A good documentor cannot take anything for granted. Even though a comprehensive blueprint may have been developed, the first step toward documentation is to review that blueprint with program staff and management.

1) **Review the Blueprint** — Regardless of how well the program is delineated, it will probably change. A program is an evolving entity. Moreover, program personnel will often couch decision situations in vague language in order to "maintain flexibility." However, this only tends to confuse and complicate documentation. Obfuscation does nothing for the program, and may actually inhibit progress toward the desired outcome. Therefore, it is incumbent upon the documentor to develop a working relationship with program staff and management in order to review and update the blueprint.

2) **Define Important Terms** — The identification and definition of important terms should take place before the development of the first decision question. The documentor must be sure that all the language being used in the program is understood. Consequently the program managers must be pressed to be as specific as possible in their definition of terms. Reviewing the sample client goal suggests the following definitions:

A. Parent: Father, mother, relative, legal guardian, or adult friend takes an interest in the student and who has importance in the student's relationship with the school.
B. Participate: To have a part or share in school activities.
C. School Activities: Specific events initiated or sponsored by the participant schools, specifically;
   1. Visitation: A formal or informal visit by a parent to the school in which there is contact between parent and teacher to facilitate the establishment of rapport.
   2. Discussion: Verbal or written communication between parent and teacher specifically regarding the needs of their children.
   3. Involvement: The inclusion of parents in school activities through a planning, implementing, or evaluative role.

3) **Identify the Decision Situations** — A decision situation is defined as any aspect of the program that may be the subject of documentation and evaluation. This includes each element of each program cell. Identification of decision situations begins by delineating population, behavior, and environment based upon the following definitions:

A. Population: Those persons involved with or affected by the implementation of a program, usually identified as client, staff, or management.
B. Behavior: The conduct or action of client, staff, or management toward fulfilling an expectation of the program.
C. Environment: The conditions affecting the development of the program, usually identified as *specific* intents, methods, or resources.

As stated in Chapter I, each program cell is created by the combination of the elements of the population and environment facets (i.e., client, staff, management with intents, methods, resources). Each program cell and each decision situation in the cell also includes an element of the behavior facet in accordance with Lewin's formula $B = f(P,E)$. The sample client intent is made up of the following population, behavior, and environment elements:

Population	**Behavior**	**Environment**
Parents	Participation	School Activities: teacher visitations discussions with teachers involvement in school functions

Conceptually, laying out the program specifications in the form of a decision situation is very much like diagramming a sentence. In elementary school one learns that a simple sentence is composed of a subject, verb, and usually an object. If one substitutes population for subject, behavior for verb, and environment for object, then one can first identify the elements, and then describe any decision situation in the form of a statement.

In our example, the documentor can choose from two levels of specificity. The first identifies a general decision situation, "The

P B E

parents will *participate* in *school activities.*" The second level of specificity identifies decision situations as shown in the following list:

A. Decision Situation I

P B E

The *parents* will *participate* in *teacher visitations.*

B. Decision Situation II

P B E

The *parents* will *participate* in *discussions with teachers* regarding the needs of their children.

C. Decision Situation III

P B E

The *parents* will *participate* through *involvement in school functions.*

4) **Develop the Decision Questions** — The decision question is defined as a point of inquiry into a particular decision situation.

The step from decision situation to decision question is small but critical for it entails a change in perspective. One must move from the realm of planning and expectations into the area of criticism. For example, if the decision situation is, "The parents will participate in school activities," then the question becomes, "To what extent have parents participated in school activities?"

Consequently, the three decision situations just listed become the following questions by simply adding the phrase, "to what extent."

1. To what extent have parents participated in teacher visitations?
2. To what extent have parents participated in discussions with teachers regarding the needs of their children?
3. To what extent have parents participated through involvement in school functions?

Unfortunately, not all decision situations are this straightforward, nor are all decision questions that easily developed. Two examples serve to illustrate possible problems.

The first deals with multiple elements in two or more facets as in this decision situation: "The staff will plan and conduct workshops

and activities based on parent needs." Dividing the decision situation into its component parts reveals the following elements:

Population	Behavior	Environment
Staff	Plan Conduct	Workshop Activities

Interrelating one element from each facet would form four distinct decision situations.* The addition of the phrase "to what extent" would form four distinct decision questions. For example, the decision situation, "The staff will plan activities based on parent needs," is translated into the decision question, "To what extent did the staff plan activities based on parent needs?"

Another problem arises when dealing with resources. In the blueprint format, human, time, and material resources are usually only listed. Consequently, the documentor in consultation with the program staff and management must generate behavior which is relevant to the resources. Experience suggests that the most obvious behavior is "utilization of the resources" as illustrated below.

Population	Behavior	Environment
Management: Site Coordinator	Utilize	Resources: Human Time Material

One of the many decision situations inherent in the elements just listed is, "The site coordinator will utilize the material resources." The decision question would be, "To what extent did the site coordinator utilize the material resources?"

Remember that facet design is primarily a conceptual tool for accomplishing a greater purpose — the development of worthwhile questions. The documentor should be flexible enough to try out a number of decision questions until satisfied that the questions reflect the intents of the blueprint.

5) **Prioritize the Decision Questions** — Given the potential for developing so many questions, it is important to have the program staff and management prioritize those questions relevant to each cell. This can be done informally through interview and discussion, or formally by using an instrument such as this:

*A quick and simple way of figuring the number of potential decision situations or questions is to multiply the number of elements in each facet, in this example 1P x 2B x 2E = 4.

Decision Question	Validity		Importance		
	Yes	No	Low	Mod.	High
To what extent have parents participated in teacher visitations?					
To what extent have parents participated in discussions with teachers regarding the needs of their children?					
To what extent have parents participated through involvement in school functions?					

A specific decision rule must be determined regarding at what level (low/moderate/high) the question will be deemed important enough to warrant the development of criteria. For example, "Discard any questions which are rated invalid, or which are rated valid but low in importance." Decision rules are especially important when dealing with large numbers of potential questions.

6) **Generate Criteria** — A criterion can be defined as a characterizing mark or trait that serves to identify relevant information for judging the program. Specifically, a criterion qualifies the behavior outlined in the decision question. Stufflebeam (1971), among others, has identified three categories of criteria: technical adequacy, utility, and cost effectiveness. The following list contains some specific criteria relative to each of Stufflebeam's categories:

A. **Technical Adequacy** (Scientific) — How sound or sensible is the action taken?
   1. Internal Validity: Is the behavior reasonable given the specific behavioral objective of the decision situation?
   2. External Validity: How generalizable is the behavior relative to the overall intents of the program?
   3. Reliability: How consistent is the behavior?
   4. Objectivity: Is the behavior based upon unbiased experiences and perceptions?

B. **Utility** (Practical) — How useful is the behavior relative to meeting program intents?
   1. Relevance: To what extent is the behavior responsive to the stated intents of the program?
   2. Importance: How critical is the behavior in meeting program intents?
   3. Scope: Does the behavior address the entire range of program needs?
   4. Credibility: How believable and thus acceptable is the behavior to the program population?
   5. Timeliness: Was the behavior provided when it was needed?
   6. Pervasiveness: To what extent does the behavior affect all relevant segments of the program?

C. **Cost-Effectiveness** (Prudential) — How valuable is the behavior relative to the human, time, and material investment?

Although the above categories are widely used, the documentor does not want to be limited to just those criteria listed. Ideally, criteria most relevant to the program under investigation are developed. For example, the following is a list of some other criteria which may be useful in documenting a program:

Degree	Adequacy
Frequency	Duration
Amount	Correlation
Efficiency	Feasibility
Transfer	Sensitivity
Effectiveness	Legitimacy
Order	Continuity
Weight	Appropriateness
Score	Need
Presence/Absence	Integrity

Each criterion should be defined relative to the decision situation to be documented and evaluated.

In generating criteria, it is helpful to conceive of program evaluation as a process which helps administrators make decisions. From this point of view, criteria are components of decision making. That is, where critical questions are being asked in order to make judgments about a program, criteria provide the performance indicators. Performance indicators are those concrete, behaviorally stated, and observable actions of the population which are examined in order to document the achievement of intents, implementation of methods, or utilization of resources.

The generation of criteria is very often the most difficult part of documentation. In some cases, program staff and management will have specific ideas about what the criteria are for judging their program. In most instances, they will not have given it much thought. Consequently, the documentor will need to take the initiative in assisting staff and management in identifying those performance indicators that might be used as criteria.

There are five methods that can be of some assistance in generating criteria. The first is direct interviewing of the staff and management. The second involves using small group discussions to achieve consensus regarding relevant criteria. A third is for the documentation staff to assume the burden of generating criteria through "brain storming" sessions based upon their experience with the program. The fourth involves bringing in an outsider who has had experience with similar programs. Finally, turning to the dictionary or thesaurus one can develop formula definitions or identify synonyms for the specific behavior outlined in the decision situation. This alternative terminology very often suggests criteria that can then be further defined within the context of a unique program.

To give an example, a "brain storming" session might result in

the following criteria to judge the sample client goal:

1. Frequency — the number of times parent-teacher contact takes place.
2. Productivity — the value of parent-teacher contact.
3. Quality of Atmosphere — the general tone of a relationship between parent-teacher which affects communication, problem solving, and the building of working partnerships.
4. Degree of Collaboration — the cooperation between parent and teacher/school in defining topics, pursuing discussion, and sharing decision making.
5. Relevance of Content — the substance of communication relative to student needs.
6. Degree of Motivation — the amount of parent incentive working to bring about parent-teacher contact.

Most often unique criteria will have to be developed for each decision question. However, when practical, the development of criteria for an entire cell allows for an easier comparison of data.

7) **Prioritize the Criteria** — This is an important follow up step during which staff, management, and documentor negotiate which criteria will be used. As in the prioritization of decision questions, this can be pursued formally or informally. Remember, there is no set number of criteria per question. Experience suggests that three to six is a reasonable and workable number.

8) **Develop the Criterion Questions** — If a decision question (PBE) is combined with a criterion (C), then a specific criterion question (PBEC) is generated. This criterion question becomes the primary focus when investigating a program. For example, if the decision question is, "To what extent have parents participated in teacher visitations?" then the addition of the criterion "frequency" produces the criterion question: "How frequently have parents participated in teacher visitations?"

The process can be better illustrated by first outlining and then interrelating the four facets of population, behavior, environment, and criterion:

Population	Behavior	Environment	Criterion
Parents	Participation	School Activities:	Frequency
		Visitation	Productivity
		Discussion	Atmosphere
		Involvement in	Collaboration
		school functions	Content
			Motivation

Interrelating the facets suggests a potential of 18 criterion questions.* Some of the possible questions are as follows:

1. How frequently have parents participated in teacher visitations?
2. How productive were parent discussions with teachers regarding the needs of their children?

*A quick and simple way of figuring the number of potential criterion questions (CQ) is to multiply the number of elements in each facet, in this example: 1P x 1B x 3E x 6C = 18CQ.

3. What was the quality of the atmosphere surrounding parent participation in school functions?
4. To what extent were parents self-motivated to participate in teacher visitations?
5. To what extent were parent-teacher discussions relevant to student needs?
6. How much collaboration was there between the parent and school regarding school functions?

The above questions reflect the flexibility available to the documentor when designing criterion questions. Once the components of the decision situation have been identified using the PBEC process, it is not necessary to always follow the syntax or lexicon suggested by the population, behavior, environment, or criterion. It is more important to construct questions that make sense in the context of one's own program.

9) **Prioritize the Criterion Questions** — Given that not all decision questions nor all criteria are of equal importance, the documentor will want to weight each criterion question. In this way, a hierarchy will be developed which will aid in the construction of an instrument and the eventual analysis of data.

Two decisions are critical to this process:

1. Who weights and orders the criterion questions — program staff, management and/or program clients?
2. How will the relative importance of each criterion question be decided?

Regarding *who* weighs and orders the criterion questions, the suggestion is to have client, staff, and management all become involved in the process. This choice provides an interesting perspective on the way each segment of the population reacts to the program.

Regarding *how* the importance of each criterion question is identified, the suggestion is to simply place each question on a weighting scale similar to the ones used for prioritizing decision questions and criteria:

Criterion Question	Validity		Importance		
How frequently have parents participated in teacher visitations?	Yes	No	Low	Mod.	High

Theoretically, a direct combination of prioritized decision questions with prioritized criteria will produce a hierarchy of criterion questions. Operationally, it is important to repeat the prioritization process as a perception check. Repeating this process provides an opportunity to involve program clients in documentation procedures.

The addition of a Likert-type rating scale to the above instrument gives the respondent an opportunity to first validate the criterion question, then weight its importance, and finally rate its

achievement. Rating involves a decision by the respondent as to whether the criterion question was met not at all, partially, to a great extent, or totally. A sample instrument including a validity, a weighting, and a rating scale appears in Figure 3.1.

Figure 3.1 An instrument for validating, weighting, and rating criterion questions

	Validity		Weight			Rating									
	Not Valid	Valid	Low	Moderate	High	Not at all			Partially		To a great extent				Totally
			1	2	3	1	2	3	4	5	6	7	8	9	10
1. How productive was parent participation in school functions?		✓		✓							✓				
2. How good was the atmosphere surrounding parent-teacher visitations?	✓														
3. To what extent were parent-teacher discussions motivated by the parents' interest in their children?		✓			✓							✓			
4. How relevant to student needs was parental involvement in school functions?		✓							✓						

Each criterion question's score is determined by multiplying the weight times the rate of those questions judged valid by the respondent. Thus, the score for question number one would be weight (2) times rate (6) equals score (12), whereas question number two would be skipped because it was deemed invalid by this particular respondent.

The instrument illustrated in Figure 3.1 is designed to facilitate the collection of a large amount of data at one time. However, it is only one of the many data collection methods available to the documentor. Many others will be considered in the next chapter.

Summary

The blueprint contains a wealth of information which needs to be reorganized into question form before instrumentation. Development of evaluation questions begins with the restatement of each decision situation in question form. Each decision question then suggests relevant criteria which will be used as performance indicators to judge the particular behavior outlined in the decision

situation. Questions and criteria are combined to form criterion questions which become the major focal point of documentation and lead to instrumentation. The process assumes that a program consists of a large number of small tasks which if successfully completed, will lead to the fulfillment of program intents. Consequently, documentation is cumulative in nature.

In this chapter, the development of a logical and systematic means of determining questions and criteria based upon information contained in the program blueprint has been described. The PBEC process provides a model which is standardized enough to be easily implemented, yet flexible enough to respond to the needs of individual programs and projects.

IV
INSTRUMENTATION FOR PROGRAM DOCUMENTATION

Henry F. Dizney and Carol D. Muffett

As a backdrop to this chapter, we shall deal briefly with four basic issues in measurement which directly affect the quality of data obtained through an applied procedure. We shall then describe six steps to be followed in data gathering. We will attempt to relate the issues to the practical aspects of instrumentation. The strategy risks oversimplification at many points, but those risks can be mitigated by the critical inquiry and scholarship of the reader.

Measurement Issues

The four basic measurement issues we shall address are: objectivity, reliability, validity, and usability. The first three of these are well known by psychometricians and are inter-related in a kind of increasing dependency. The last, usability, represents an over-riding kind of criterion which common sense would recognize when science might overlook its significance. Each of these issues is critical in any measurement application whether or not it is recognized as important. Before that statement can be fully appreciated, we must define the exact character of measurement.

"**Measurement** is a process whereby symbols are assigned to represent relevant characteristics or traits of objects and events" (Campbell, 1940, pg. 331). Needless to say, in program evaluation a great number of symbol-types are possible for representing a wide range of potentially relevant characteristics and traits. In measurement, we are concerned with the accuracy of that representation. Accuracy in this sense refers to representational fidelity which is

summarized by the "rules of assignment" of symbols to objects. These "rules" engage us in problems of scaling, the nature of the data, and the types of allowable operations regarding the data (symbols) which will facilitate the representational functions of the measures (Guilford, 1954, pp. 10-16). These can be complex issues requiring greater development than is possible here. Therefore, we shall simply say that *measures stand for things and that the way the measurement symbols are assigned to those things is an important link in establishing the accuracy of the symbolic system.*

Let us, then, turn our attention to general measurement issues. At a very basic level, the extent to which the measures are objective rather than subjective lends confidence to their meaningfulness. *Objectivity* is defined as the degree to which equally competent observers (scorers, raters, judges, etc.) agree regarding the observation. Subjectivity is private and idiosyncratic. Objectivity is public and open. Many illustrative examples are possible. Overt behavior, traits, and products lend themselves to observations; covert actions, internal states and motives do not. Standardized situations and comparable tasks are more likely to be objectively measured than are uncontrolled and varying sources of data. Checklists, criteria, and "fixed-key" score cards are superior to impressionistic, holistic, and projective techniques in terms of objectivity.

Reliability is a broad concept referring to the general consistency of measures and their dependability over time and context. Reliability has to do with the accuracy and precision of measurement procedures (Thorndike, R.L. and Hagen, E.P., 1977). That is, measures are estimates on the order of:

X	=	T	+	E
Observed Score		True Score		Error Component

where any observed score is equal to the combination of the true score and an error component.

On the assumption that true scores are constant, an operational definition of reliability infers the amount of error present by variation in X determined from two or more equivalent but independent estimates of the same thing. Reliability includes not only the observer (objectivity) as a source of error, but also at least three other general possibilities. These error sources are: (1) **personal** — swings and shifts attributable to moods, fatigue, warm-up, or whatever "within" the person being measured which make the measure either an over or under estimation of that person's true score; (2) **situational** — places and times bring with them unique factors which again may lead to error; e.g., noise, distraction, atypical conditions, etc.; (3) **instrument-centered** — scales, rating forms, tests, and other procedures are almost always samples of behaviors from larger universes of behavior, as such, the specific items in an instrument may inaccurately favor or prejudice the larger estimate.

In order to enhance reliability, the test maker strives to reduce the error component thus bringing the observed score and true score closer together. Recognizing that reliability is inversely related to error, the more error the less reliability, certain procedures and recommendations are evident.

In regard to measurement design, clarity in terms of benavior, trait, or construct to be measured will enhance reliability. Explicitness is preferable to vagueness. For example, the counting of events, measures of participation and records of behavior are more reliable than are inferences regarding motives and intent.

In scoring, rating, and recording, clear directions, consistent procedures and clerical accuracy all improve reliability. Accurate checklists and permanent records are objective; impressions and clinical "protocols" are subjective.

Finally, in regard to the adequacy of samples and objectives, we may recognize that we often under sample. The value of a complex, long-term program cannot be reliably determined by a few pieces of data. A few volunteer participants providing selective testimony is a risky data base for generalization.

One final comment regarding reliability is that reliability is a relative matter that applies to a measurement procedure. It is *not* an all or none property applying to single instruments. Standardized, published, and previously used scales ought to offer some description of reliabilities obtained in the scale's use (American Psychological Association, 1974). Scale developers should take responsibility for determining reliability estimates of their scales.

Validity is the heart of the measurement game. If measures accurately represent the things they stand for, then those measures can be useful; if they do not, their use will only lead to error and misrepresentation. As with reliability, there are a number of ways by which validity estimates are operationalized. We shall consider three general classes as follows:

1. *Content validity* refers to validities established by describing the content of a test, scale, or measurement procedure. It is useful when we know the composition of the things measured; e.g., achievement tests, procedures for solving mechanical problems, etc. When dealing with well-structured content areas, this form of validity is direct and offers the advantage of providing content specification for the construction of tests and scales. The weaknesses of the strategy are evident where judgment is less sure. For example, what should be the content for a scale measuring creativity, or personality, or community interest?

2. *Criterion-related validities* refer to evidence about the relationships between the scale in question and criteria of one kind or another. An achievement test may be correlated with another achievement test, or grades, or teacher judgment, etc. These procedures are powerful so long as we can agree upon and

obtain adequate criteria. As the things measured become more complex, or controversial, or evasive, the less chance we have for either agreeing upon or obtaining such criteria. Additionally, the strength of our validity claims are not only a function of the scale being developed, but also of the relevance (validity) of our criterion *and* of the context within which the relationship was determined (e.g., what sample? where? when? under what conditions?). Here we often find ourselves in a complex interpretive problem similar to trying to determine how high is "up" based upon relative reference points.

3. *Experimental* [*construct*] *validity* is based upon the evidence of an "experiment". Let us suppose we wish to validate a scale designed to measure "sensitivity to others." One way to do so would be to administer the scale to persons who had been trained for such sensitivity in a workshop to persons not so trained. We would hope that our scale scores would differentiate between these groups in favor of the trained. Another possibility is to measure with our scale both before and after such training with the expectation of significant "improvement."

As is the case with reliability, validities are estimates associated with instruments or procedures. The validity of an instrument is conditioned by the methods employed in making the estimation. The APA *Standards* (1974) contain many useful recommendations for published scales. The burden of proof for locally developed measurement procedures is upon the developer.

Utility concerns practical considerations which cannot be ignored. Measurement and evaluation, though vital functions, are but part of the whole in most projects. Cost-effectiveness judgments must be made in terms of the information gained and its benefits *vs.* time, expense, effort, and neglect of other functions as cost factors. Things to consider in measurement utility are: ease of administration, time requirements, ease of scoring, and interpretability. Other things being equal, it is probably as safe and as risky to follow principles of parsimony and directness in measurement as it is in life. In short, usability will influence the types and kinds of measures employed more directly than will the earlier discussed technical considerations. However, if usability is judged on the sole criterion of convenience, an unfortunate situation arises since that criterion typically sacrifices the more fundamental requirements of quality measurement.

Six Steps in Data Gathering

Having described and discussed the general measurement issues inherent in the development of data gathering instruments, we now move to the practical problem of instrument construction. The rest of this chapter focuses on a discussion of the six steps to be taken in data collection described by TenBrink (1974). These six steps are as follows:

1. Describe the information needed

2. Determine if the information is already available
3. Decide how and when to obtain needed information
4. Construct (or select) the information gathering instrument
5. Obtain needed information
6. Analyze and record information

1) **Describe the Information Needed.** This step is a direct outcome of the criterion questions which have been developed and prioritized, as explained in the previous chapter. For example, in the criterion question, "How frequently have parents participated in teacher discussions about their children?", the information is clearly stated. Most criterion questions, when developed according to the guidelines in Chapter III, will clearly state the needed information.

2) **Determine if the Information is Already Available.** This is a step which is commonly forgotten when making plans to collect data — exploring the possibility that the information is already available. The first task is to list the sources where the information is likely to be found. For example, records which are routinely kept such as attendance data from meetings, classes, and events and data from previously administered surveys, questionnaires, and forms which often contain information such as age, sex, experience, and so forth are prime sources of information. Consider the criterion question stated above, "How frequently have parents participated in teacher discussions about their children?". At least part of this information has probably already been recorded by the school when the regular parent-teacher conferences were conducted.

If information is already available then the next task is to determine the extent to which the information is usable. In determining usability it is important to consider: 1) the accessibility of the records; 2) the accuracy of the information; 3) how carefully the data was recorded; 4) the need to draw a sample from all the information which is available; 5) the time and cost of summarizing the information; and (6) the usefulness of the information in making the anticipated program decisions.

3) **Decide How and When to Obtain Needed Information.** This is the most important step in instrumentation — exactly *how* the information will be collected. One must consider that there are four broad classifications of information gathering techniques which may be used:

1. Observation (noticing the important elements of a performance or product).
2. Inquiry (asking an individual about himself or someone else).
3. Analysis (separating something into its component parts).
4. Testing (providing a common situation, a common set of instructions, and a common scoring scheme which yields a numerical value of performance).

Within each of these classifications, there are a variety of types of instruments which can be used. The "Techniques of Data Collection" which appears in the Appendix lists the types of instruments under each of the four classifications and gives a brief description of the instrument with its particular strengths and weaknesses. The reasons

for including such a list are, first, to provide a reminder that a whole host of instrument *options* are available, each with a specific purpose and, second, to discourage over-reliance on *one* type such as questionnaires or interviews.

If it is determined that the development or selection of an instrument is necessary, then the first task is to decide which broad classification and type of instrument is suggested by the nature of the criterion question. For example, consider the following question: What was the quality of the atmosphere surrounding parent participation in school functions? Using one of the inquiry techniques (see Appendix, Section 2.0), the perceptions of the atmosphere by parents and/or school personnel could be measured (and even compared as a discrepancy check). Another option is one of the observation techniques such as the action checklist (see Appendix, Section 1.2.2) to record and tabulate the kinds of events or behaviors which are taking place during school functions.

For another example, consider the following question: How productive were parent discussions with teachers regarding the needs of their children? As discussed earlier, the questionnaire technique is frequently used to collect data on perceptions and attitudes towards various events. In some cases, it may be the most appropriate means available. Using the above question as an example, suppose the best way to determine the productivity of the parent discussions is to simply ask the parents or ask the teachers. Figure 4.1 provides an example of a questionnaire or rating form which could be used to collect data on parent attitudes.

After deciding how to obtain the information, the next step is to decide when the information should be obtained. There are several important considerations. First, the general design to be used will partially determine when the data will be collected. For example, if a "pre-post" design is used, sufficient time at the beginning and end of the year will be needed to collect data. The time required to construct or select the instrument must also be taken into account and will determine when data collection can begin. When the actual schedule for data collection is determined, such factors as vacations and holidays should be considered. In some cases, a certain amount of time should be allocated to train the instrument administrators. Depending on the type of instrument being used, other considerations emerge. For example, when conducting interviews, time is required to schedule appointments and to travel to the site. When conducting mail surveys, time is required to update address lists, prepare the mailing, and to wait for returns to come in.

4) **Construct [or Select] the Information Gathering Instrument.** Once the type of instrument has been decided upon, the next step is either the actual construction (generation of items, etc.) or selection of one instrument from among several of the same type. When constructing or selecting instruments, the issues discussed earlier of objectivity, reliability, validity, and usability should be kept in mind. The strengths and weaknesses of each type of instrument, listed in

the Appendix, also provide specific information that should be referred to during the construction or selection process. Beyond these general suggestions, more specific recommendations for constructing each type of instrument would be too lengthy to include in this chapter. The reader is referred to TenBrink (1974) and Brandt (1972) for more specific instructions for construction of checklists, rating scales, questionnaires, and other types of instruments.

Finally, when constructing instruments, the level of expertise needed to generate items, construct scales, and analyze the data is an especially important concern. A certain amount of previous experience and creativity are often necessary to construct a good instrument.

5) **Obtain Needed Information.** In the process of obtaining the needed information, an important consideration is to be certain that those persons who actually collect the data are completely familiar with the instruments. Depending on the instrument used, special training of the data collector(s) might be needed. The various types of instruments call for different important considerations. For example, 1) while obtaining observational data, unobtrusiveness is often important; 2) when administering questionnaires, carefully worded instructions are important; and 3) when conducting interviews, rapport with the interviewee is important (see TenBrink, 1974, for more detail).

Figure 4.1: Parent Attitude Form

Please take a few moments when you get home to fill out this form about the visit you just had at school. By gaining your views, our staff will be better able to talk with parents about the topics of most concern to them and their children. We have not asked for your name so that you will feel free to fill out this form honestly and openly. Please use the attached stamped, addressed envelope to mail back your form as soon as possible. Thank you.

1. The visitation concerned my: (mark one)
   _____ son _____ daughter

2. Who is in grade: (mark one)
   _____7 _____ 8 _____ 9

3. Do you have other children who now attend this school? (mark one)
   _____ Yes, older children _____ Yes, younger children
   _____ Yes, both older and younger children
   _____No

4. Was this your first visit to school this year (mark one)
   _____ Yes _____ No

Listed below are several topics that may have been discussed during the visitation. Please mark whether or not you and a staff

member discussed the topic and your general satisfaction with the discussion (were your questions answered, etc.). Please add any comments you wish.

5. My son's/daughter's grades in a subject

Yes, was discussed	No, was not discussed but I wished to discuss it	No, was not important at this time
_____	_____	_____

If "yes" above, please rate your satisfaction with the discussion

Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
_____	_____	_____	_____

Comment:

- •
- •
- •

10. Other topic _____

Yes, was discussed	No, was not discussed but I wished to discuss it	No, was not important at this time
_____	_____	_____

If "yes" above, please rate your satisfaction with the discussion

Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
_____	_____	_____	_____

11. Please rate your over all satisfaction with the visitation

Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
_____	_____	_____	_____

Comment:

6) **Analyze and Record Information** (from Gellman, 1973). Although a detailed discussion of data analysis procedures would be too lengthy for this document, a brief summary of various methods is included.

In reporting data which has been collected, it is sometimes appropriate to simply *present or summarize* the data without any sort of true transformation involved. Several alternatives for summarizing data are the frequency distribution, percentage distribution, grouped (or interval) frequency distribution, cumulative frequency distribution, or some type of graphic representation (frequency polygon, histogram, cumulative frequency polygon, etc.).

Very often it is appropriate to determine some kind of index of a *"typical"* type of performance on a particular item or instrument. Alternatives are the mode (most frequently occurring score), median (score below which 50 percent of scores fall), and mean (arithmetic average).

When it is appropriate to report the *variability* of the responses on a particular item or group of items, several alternatives are available such as the range (highest minus lowest score, plus 1), standard deviation (average degree to which each of the scores differs from the mean), and variance (standard deviation squared).

In those cases where the *order* of the various performances on an instrument is the most informative analysis, one might choose ranks (highest to lowest), percentile ranks, or standard scores (a z-score represents the number of standard deviations between a score and the mean).

When selecting from the alternatives available, the choice will be determined by the types of comparisons which are to be made. For example, standard scores are particularly useful to compare two scores from distributions with different means and standard deviations. More complex methods of analysis are also available to allow *correlations and predictions, group comparisons,* and *comparisons over time.*

In summary, the final step in the documentation process — instrumentation — concerns several important measurement issues. The issues of objectivity, reliability, validity, and usability of instruments should be kept in mind as decisions are made about collecting information. Six steps were outlined that may be used to guide instrumentation. The first four steps address the questions: What information is needed? Is it already available? How and when will it be collected? How will the instruments be constructed or selected? The last two steps in instrumentation direct the documentor to the actual collection and analysis of data. Following these six steps and referring to the "Techniques of Data Collection" listed in the Appendix, should help the documentor to provide the client decision maker with the most relevant data possible with which to make decisions about the program.

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APPENDIX
TECHNIQUES OF DATA COLLECTION
Based on TenBrink (1974) and Brandt (1972)

	Description	*Strengths/Purposes*	*Weaknesses/Cautions*
1.0 *Observation Techniques*	The process of looking and listening—noticing the important elements of a performance or product.	Best suited to gathering information about a person's psychomotor and affective behavior	Possible source of error is observer bias in identifying which behaviors are "important."
1.1 Narrative data			
1.1.1 Anecdotes	A word description of a selected behavior episode	Useful to gather information to generate hypotheses for later testing; although difficult, may be classified and quantified. Lacks interpretive input of the observer.	Time consuming; close attention to recording is important; consistency of details from one anecdote to the next is important; difficult to determine behavior's beginning and end; difficult to determine which behaviors should be selected. (See Brandt, pg. 84-85, for guidelines in collecting anecdotal data.)
1.1.2 Specimen Records	A continuous record over a brief amount of time of an individual's behavior.	Useful to detect behavioral patterns, to detect long term change in behavior of individuals.	Time consuming; close attention to recording is important; consistency of details etc. from one anecdote to the next is important; difficult to determine behavior's beginning and end; difficult to determine which behaviors should be selected. (See Brandt, pg. 84-85, for guidelines in collecting specimen data.)
1.1.3 Field Notes	Field notes may contain anecdotes but also include interpretation. Focus on certain issues or phenomena by interrelating elements of several observations.	Provide clues to important personal and social dynamics.	Highly subject to idiosyncratic effects of each observer; difficult to replicate; calls for a cross-check by other methods of data collection.
1.1.4 Ecological Descriptions	A detailed description of the influencing environment in which behaviors take place.	Same as "anecdotes" above.	Same as "anecdotes" above.
1.2 Checklists	A systematic, consistent record of the presence or absence of specific behaviors, objects, conditions, or events.	Provides information on whether a given characteristic is present; easily summarized.	Observer must be able to identify or list important categories of behaviors, events, etc. (See TenBrink, pg. 274-276, for steps in constructing a checklist.)
1.2.1 Static descriptors	A set of descriptive items that are to be checked or filled out pertaining to highly stable characteristics of individuals or settings.	The items will depend on the specific study; examples are age, sex, educational background. Useful to consider the effects of such variables in a particular study.	Observer must be able to determine which variables are likely to be appropriate for the study.

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1.2.2 Action checklists	Noting and recording the frequency of particular behaviors, usually by use of tally marks or symbols.	Allows a determination of frequency of certain behaviors; easily summarized.	Behavior alternatives must be somewhat limited, mutually exclusive and readily discernible to observers; careful instructions and recording procedures are needed to assure high inter-observer reliability.
1.2.3 Activity logs	A permanent performance record of an activity, usually limited to major happenings and regularly taken performance or activity measures over a given period of time.	Allows detection of important changes in activities that may otherwise go unnoticed. If properly standardized, can be summarized within and across logs kept by different persons.	Standardization of the log entries is most important to provide systematic, swift, easy entry of information; reliability may be checked by using independent observers.
1.2.4 Discrete event records	A record of only certain classes of events, systematically recording certain characteristics such as dates, times, and other key facts.	Allows systematic data collection on a particular class of events.	Same as above.
1.2.5 Standardized situation responses	A record of the frequency of types of behaviors and events that occur during a recurring real-life situation.	Allows study of the variation in behavior under a standardized situation, much the same as in laboratory experiments.	The "situation" must be a stable, recurring situation; the behavior alternatives must be mutually exclusive and readily discernible to observers.

1.3 Ratings	A judgment, made along a rating continuum, about the degree or extent of some characteristic of a behavior, object, or end product.	Allows a quantitative assessment of the degree to which some quality is present; assures a more objective judgment by the observer.	The trait being measured is often ambiguous; judges are often influenced in their rating by other qualities besides the ones being rated; raters tend to be too severe or lenient; certain qualities are more socially acceptable than others. (See Brandt, 1972, for examples and steps to improve ratings.)
1.3.1 Numerical	Numbers are assigned to descriptive categories.	Easily constructed and applied; data is easily summarized unless a psychological scaling technique is used.	Definitions of each category must be precise, and observers must be carefully trained; numbers assigned to the categories may not represent psychological reality.
1.3.2 Graphic	The rating procedure is a continuous line with cues along the line to help raters make their judgments.	Suggests a variable continuity.	The socially desirable end of the continuum should be at the same end for all traits.
1.3.3 Cumulated-points scales	Each item acts as a separate indicator of an overall trait and the items may be summed.	Easily summarized.	Must be sure items are in fact additive.
1.4 Rankings	Observer ranks the persons or objects being judged on the basis of the degree to which they possess the characteristic being measured.	An easy procedure; forces the rater to differentiate among all of the persons or objects being rated.	Should only be used when a *rough* estimate is needed; the meaning of a particular rank is dependent on the size and nature of the group being ranked.
2.0 *Inquiry Techniques*			
2.1 Questionnaire	A list of questions written down so that they can be read and responded to by individuals.	Enables a collection of information about individuals' opinions and attitudes; enables a determination of what individuals did or might do in a situation; allows a systematic, quantifiable measure of individuals' perceptions.	This measure yields perceptions; self-report data is prone to unconscious distortions by the respondent; effects due to social desirability of certain responses, and instability of the responses over short periods of time; respondents often interpret the statements or terms differently; return rate of questionnaires is typically low; respondents and nonrespondents may differ in important characteristics; cooperation and honesty of the respondents may be enhanced by 1) giving them reasons why the questionnaire is bing administered, 2) allaying their fears that any consequences will be contingent on their answers, 3) giving complete instructions.
2.1.1 Forced-choice technique	Several attributes are considered at one time by the respondent; each time two attributes or statements are presented together, the respondent must choose one over the other.	Such instruments usually yield data which is not contaminated by social desirability of the attributes; the perceived content of the instrument is subtle; the instrument is thought-provoking to respondents; the statements can represent life-like situations.	Respondents may have difficulty making judgments; when two quite different traits are paired, interpretation becomes difficult.

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2.1.2 Semi-structured reports	Reports filled out by employees, students, etc. that are required by the institutions of which they are a part.	Provide a basis for administrative decisions; often lack the artificial nature of many questionnaires.	The data may be biased by the respondent's desire to enhance his/her status and to de-emphasize certain matters.
2.1.3 Q-sort methodology	A sorting procedure in which the respondent is asked to sort items into piles or categories along a continuum.	Game-like quality makes this procedure an enjoyable task for respondents; may be analyzed statistically; a useful technique for exploratory research where the variables are not clearly defined.	Requires sophisticated statistical treatment.
2.2 Interviews	A somewhat formal conversation structured around the purposes of the interviewer and designed to elicit the precise information needed.	Along with the questionnaire, it is the primary tool to tap thoughts and feelings; often uncovers unexpected, but important, information; can often be used in very informal settings.	The information is highly subjective and likely to contain a great deal of error; interviews take a great deal of time; the way questions are worded will have a large influence on the usefulness of the answers; requires skilled interviewers. (See Brandt, 1972, for a list of important considerations; see TenBrink, pg. 304-306, for specific instructions.)

2.2.1 Poll-type	A broad survey of public opinion concerning an event, product, policy, social trend, etc.	Allows politicians or businessmen to obtain evidence to support their positions or products.	The public is skeptical of polls due to their past misuse; different polls on the same subject often produce conflicting results.
2.2.2 Structured/formal	A set of specific questions are asked and responses recorded by the interviewer.	Provides an opportunity to obtain opinion and reaction to situations, events, and practices which are too personal or complex to obtain in questionnaires.	Such interviews have been overused and sometimes misused; various types of questions may be posed; easily summarized.
2.2.3 Open-end	A set of specific questions are asked, with the option of further probing by the interviewer.	The purpose is to adhere to a predefined content area but to allow the interviewer to clarify the responses given or obtain additional information in a certain area.	Difficult to summarize. Provides much opportunity for off the topic responses.
2.2.4 Non-structured	The interviewer has a set of general questions that are to be asked, but the manner, wording, and timing is at the interviewer's discretion.	If needed, the interviewee is not aware of being interviewed; if necessary, the interview may be incorporated into ongoing events or conversations; allows indepth probing; allows spontaneous issues to arise.	Lack of standardized questioning patterns; difficult to code and quantify; interviewer must be skilled in asking questions, gaining rapport, timing, probing, asking for clarification, etc. (See Brandt, 1972, for a discussion of interview skills); difficult to replicate.
2.3 Sociometric instruments	Instruments designed to obtain evidence about the social acceptance of individuals within a group or about the perceived relationships within that group.	Results will permit interpretations about group structure, individual status, peer expectancy, and many other variables.	Requires a good rapport between person asking the questions and person doing the tasks; respondents must be assured of the anonymity of their responses.
2.3.1 Nominating device	Individuals are asked to nominate persons to share in some hypothetical event, etc.	Same as above.	Interpretation of data is difficult; results tend to be unstable.
2.3.2 Guess-who technique	Individuals are provided hypothetical roles and asked to guess which of their acquaintances fits the description.	Provides information about perceived social relations within a group.	Same as above.
2.3.3 Placement device	The individual is provided a description of a situation (verbally or pictorially) and asked to place members of a group in the various positions or categories.	Same as above.	Same as above.

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3.0 *Analysis Techniques*			
3.1 Content analysis	Analysis of performance or products of written assignments, by counting the evidence of certain characteristics.	A largely unobtrusive measurement device.	The investigator must know in advance the characteristics of importance.
3.2 Documents	Analysis of public documents (e.g., newspapers, want ads, tax records) and private documents (e.g., diaries, desk calendars, notebooks).	While personal documents are not readily available or amenable to statistical treatment, public documents are plentiful; such analysis is largely unobtrusive.	Investigation must consider authenticity, degree of bias, and validity in analyzing such documents. (See Brandt, page 203-204, for a list of examples of public documents.)
3.3 Routine Records	Ongoing records kept by institutions, sometimes of a descriptive nature and sometimes open to the public via libraries, government publications, archives, etc.	Such records provide data which has already been collected and which is sometimes amenable to summarization and analysis for specific purposes; such data is most useful as a supplementary source of information to other sources, *not* as a primary or sole indicator.	Investigators must determine the procedures that were used to collect and record the data and the possible sources of errors. (See Brandt, page 205-206, for examples of routine records.)
3.4 Indices	A quantitative combination of data from observation on several different variables.	Often used by institutions to provide ongoing, systematic feedback for decision-making; usually the data must be converted to ratios, percentages, or some other basis for comparison.	Extraneous influences on, and the accuracy of measurement of, each variable must be determined; often requires sophisticated statistical analysis to adjust the figures for seasonal variations and other biasing factors.

4.0 *Testing Techniques*			
4.1 Specially constructed tests	Obtaining measures of cognitive achievement in a given area of instruction.	Can be constructed to explicitly measure the specific instructional goals of a given unit of study; can be given at any point in the instructional sequence; decisions can be made concerning very small or large units of instruction; may be scored quickly; can serve many different purposes including diagnosis of strengths and weaknesses, determination of mastery of certain skills, ranking of performance for grading purposes, predicting future performances, etc.	Test items which are written must be worded to avoid ambiguities; test items must carefully match the content and intent of the instruction; an item analysis is needed to determine whether the items are reliable and valid. (See TenBrink, pg. 337-408, for types of test items and guidelines for constructing items and analyzing test results.)
4.2 Standardized tests	Obtaining measures of aptitudes and cognitive achievement under standardized conditions.	For most standardized tests, norms are available which provide "expected" scores at various levels (age, grade, male/female, etc.); usually, data is available on reliability and validity estimates for the test; most tests are easily hand-scored or computer-scored	The appropriateness of a standardized test may be judged according to certain criteria: 1) close match between test content and instructional goals; 2) norms which are based upon a group similar to the group to be tested; 3) acceptable estimates of reliability; 4) acceptable evidence of validity; etc. (See TenBrink, pg. 407-435, for guidelines.)

Figure 1.3: A blueprint for a program designed to integrate multicultural curriculum activities with existing curriculum content

	CLIENT DEFINITION:	STAFF DEFINITION:	MANAGEMENT DEFINITION:
	Twenty voluntary K through 8 teachers in Woodlawn School designated as participants in the multicultural workshop.	Those persons (Team Leader, Program Development Specialist, and the Inservice Coordinator) given the responsibility for developing and conducting an inservice workshop designed to train teachers in analyzing a curriculum and integrating the curriculum with a multicultural focus.	The Team Leader is given the responsibility for directing and managing courses of action leading to the training of teachers to integrate multicultural activities with curriculum content.
INTENTS	Given the opportunity to participate in an inservice workshop for analyzing the curriculum and integrating a multicultural focus, twenty K through 8 Woodlawn School teachers will be able to integrate multicultural curriculum activities with existing curriculum content, as demonstrated by documented programs that satisfy criteria for an integrated multicultural curriculum.	Given the task to train teachers to integrate multicultural curriculum activities with existing curriculum content, the staff (Team Leader, Program Development Specialist, and Inservice Coordinator) will develop and conduct an inservice workshop designed to train teachers in analyzing the curriculum and integrating the curriculum with a multicultural focus, as demonstrated by (1) a documentated program plan, (2) evidence of implementation, and (3) examples of curriculum programs prepared by the trainees that satisfy criteria for an integrated multicultural curriculum.	Given the responsibility for directing and managing courses of action leading to the training of teachers to integrate multicultural activities with curriculum content, the Team Leader will organize spatial, physical, and human resources necessary for developing and conducting an inservice workshop, as demonstrated by the documentation of actions taken.
METHODS	Teachers will participate in an inservice workshop designed and conducted to achieve the following objectives: Session I Objectives — Teachers will have a knowledge of the sequence of activities in terms of content and a common understanding of terms. Session II Objectives — Teachers will (1) develop the ability to examine and assume responsibility for their own motives, and (2) plan and implement effective techniques for enhancing the self-concept of students regardless of cultural or ethnic background. Session III Objectives — Teachers will develop the ability to recognize and use positively the diverse cultural factors which influence individual student learning style behavior. Session IV Objectives — Teachers will develop skills for helping students (1) recognize prejudices in school, (2) recognize the positive aspects of the pluralistic society, and (3) live with others in a school and classroom. Session V Objectives — Teachers will develop the ability to (1) evaluate curriculum materials in terms of defensible multi-ethnic or multicultural content, (2) select appropriate media and materials to support a multicultural curriculum, and (3) integrate multicultural curriculum activities with existing curriculum content. *See Detail A for more detailed discussion of objectives for all eight sessions.	1. Conduct a needs assessment — See Detail B 2. Planning session with Area Two Staff (Portland Public Schools, Woodlawn, and Teacher Corps). Information type meeting as to district and Teacher Corps activities. 3. Sharing and orientation meeting with total Woodlawn faculty. 4. Interview schedule developed with teachers for the identification of teacher competencies needed to accomplish the objective of the workshop. Objective was based on identified need. 5. Analysis of interview reports to determine the teacher competencies required to accomplish the workshop objective. See Detail C 6. Small group inservice committee planning to establish goals, objectives, and delivery schedule. 7. Instructional format developed. 8. Workshop plan is now being implemented.	1. Initiating and conducting a meeting with planners to: 1.1 generate needed resources for conducting the workshop 1.2 identify alternative sources 1.3 develop priorities for meeting individual resource needs (examine alternatives and select best resources) 2. Make arrangements for resources through: 2.1 ordering 2.2 scheduling 2.3 contracting/confirming 2.4 obtaining
RESOURCES	*Human* 1. Twenty volunteer K-8 teachers in Woodlawn School 2. Team Leader 3. University Instructors 4. School District Multicultural Specialist 5. Consultants *Time* 1. Eight 2½ hour sessions once a month for 9 months 2. Three hours per week for teacher classroom application of curriculum developed during workshop sessions 3. One ½ day classroom supervision per week by staff member *Material* 1. Incentives 1.1 Free graduate credit 1.2 Certification requirement completion 1.3 Movement on district pay scale 2. Curriculum Documents 2.1 Elementary School curriculum material for all subject areas 2.2 Scope and sequence of curriculum materials introduction 2.3 Multicultural curriculum materials for analysis and application 2.4 Training materials yet to be identified and sequenced	*Human* 1. Team Leader 2. Program Development Specialist 3. Inservice Coordinator 4. Two General Assistance Center Consultants 5. Instructor consultant from Washington State Department of Education (presentation) 6. Forty teachers at Woodlawn School 7. Principal of Woodlawn School 8. Area Two Staff (two district office representatives) 9. Project Director *Time* 1. Team Leader — .15 FTE 2. Program Development Specialist — .50 FTE 3. Inservice Coordinator — .50 FTE 4. Program Development Time — 9/1/76 to 11/1/76 5. Instructional Time — 1/1/77 to 6/1/77 6. Content breakdown in terms of time spent on each area 6.1 Awareness — ⅓ of total time 6.2 Materials — ⅓ of total time 6.3 Teaching Strategies — ⅓ of total time 7. Interviews — ½ hour per teacher 8. Planning sessions — 10 hrs 9. Sharing with faculty — 1½ hrs 10. Inservice committee planning — 2 hrs 11. Instructional format development — 3 hrs 12. Staff development time for generating program — 75% of the staff time assigned to this project. *Materials* 1. Informal evaluation report on interviews 2. Interview schedule 3. Needs assessment data 4. Plan for a needs assessment study 5. List of teacher competencies 6. Plan for structured interviews 7. Budget 7.1 Staff time 7.2 Materials 8. Area Two (School District) multicultural program materials	*Human* 1. Inservice committees 2. Program development specialist 3. Inservice coordinator *Time* 1.0 Multiple planning sessions 1.1 Initial meeting 1.2 Planning sessions based on decisions to be made *Material* 1. Budget — Teacher Corps monies that are made available for this program within the project 2. Report on criteria for planning and implementing strategies for workshop. The criteria: 2.1 Must be related to classroom activities 2.2 Must include follow-up activities for each session

Figure 2.1: Blueprint for a program designed to develop interpersonal and teaching skills in enhancing multicultural relationships.

	CLIENT DEFINITION:	*STAFF DEFINITION:*	*MANAGEMENT DEFINITION:*
	Grade 7-9 teachers, interns, parents and community persons, and educational assistants of Jarrett Intermediate School who voluntarily participate in multicultural workshops, courses and activities designed to develop interpersonal and teaching skills in enhancing multicultural relationships.	Those individuals (Team Leader, Program Development Specialist, Community Coordinator, Inservice Coordinator, Project Director) given the responsibility for planning and conducting appropriate workshops, courses and activities designed to develop interpersonal and teaching skills in enhancing multicultural relationships.	The Team Leader, Community Coordinator, Inservice Coordinator, Program Development Specialist, and Project Director who are given the responsibility for developing the program in general, selecting instructional personnel, and handling the logistics necessary to carry out the program. The Project Director is given the responsibility for developing the budget and handling other administrative tasks.
INTENTS	Given the opportunity to participate in courses, workshops and activities designed to develop interpersonal and teaching skills needed to enhance multicultural relationships, the clients will: 1) increase personal awareness; 2) be able to analyze interpersonal relationships; 3) become familiar with a range of teaching/learning strategies.	Given the task of providing clients with workshops, courses and activities designed to increase their personal awareness, their ability to analyze interpersonal relationships, and their familiarity with a range of teaching/learning strategies, the staff will develop and conduct an inservice program as demonstrated by: 1) a documented program plan, 2) evidence of implementation of the program, and 3) evidence of learning outcomes.	Given the responsibility for directing and managing courses of action leading to the training of clients in interpersonal and teaching skills needed to enhance multicultural relationships, the management will organize human, time, and material resources necessary for developing and conducting an inservice program as demonstrated by the documentation of actions taken.
METHODS	Teachers, interns, educational assistants, parents, and community personnel will participate in workshops, courses and activities designed and carried out to achieve the following objectives: 1.0 Develop understanding of: 1.1 culture as a process 1.2 the client-self 1.3 the student-self 1.4 culture and teaching/learning problems 1.5 culture and classroom problems; 2.0 Develop familiarity with teaching/learning strategies useful in: 2.2 tailoring multicultural, human development experiences for individual students 2.2 tailoring a program for achieving consistency between one's multicultural, human development philosophy and behavior; 3.0 Develop teamwork orientation toward diagnosis and solution of classroom problems and sharing of successful strategies. (See Detail 1 for instructional plans for client workshops, courses, and activities designed to implement client methods.)	*The staff will:* 1.0 discuss concepts and philosophy, arrive at consensus 2.0 discuss staff proposals with Voluntary Teacher Planning Group (interns, parents and community persons) for their input and recommendations 3.0 develop objectives for activities 4.0 identify resource person(s) for facilitation of workshops, courses and activities 5.0 meet with resource person(s) to develop tentative plans 6.0 conduct needs assessment 7.0 finalize plans with resource person(s) 8.0 organize and structure program logistically 9.0 conduct pre-test 10.0 conduct workshops, courses and activities 11.0 conduct post-test 12.0 evaluate workshops, courses and activities 13.0 plan and conduct follow-up activities based on evaluation findings. (See Detail 2 for plans for carrying out staff methods.)	*The Management will:* 1.0 contact resource person(s) 2.0 arrange orientation/information meeting 3.0 determine needs: 3.1 human 3.2 time 3.3 material 4.0 develop a program budget 5.0 develop a program timeline 6.0 develop a client evaluation plan designed to provide: 6.1 needs assessment 6.2 pre-test of ability 6.3 post-test of ability 6.4 decision rules for determining competence 7.0 oversee the accomplishment of client, staff, and management goals through the allocation of appropriate human, time, and material resources. (See Detail 3 for plans for carrying out management methods)
RESOURCES	*Human* 1.0 A minimum of twenty volunteers from Jarrett School including teachers, administrators, educational assistants, interns, parents, and community persons 2.0 Team Leader, Inservice Coordinator, Community Coordinator, Program Development Specialist, Project Director 3.0 University Instructors 4.0 Other consultants and resource persons 5.0 Secretarial personnel *Time* 1.0 Workshop time: four two-hour sessions, monthly for four months 2.0 Follow-up time: a range of one hour to forty-eight hours of follow-up activities for one semester 3.0 Staff classroom observation time: one to three hours per week by staff for observations, interviews, and/or conferences with clients *Materials* 1.0 Incentives 1.1 University credit to be assumed by project 1.2 Certification requirement completion 1.3 Movement on pay scale 1.4 Released time from teaching 1.5 Improved classroom management skills 2.0 Curriculum materials 3.0 Teaching/learning strategies 4.0 Facilities 5.0 Travel	*Human* 1.0 Team Leader 2.0 Inservice Coordinator 3.0 Community Coordinator 4.0 Program Development Specialist 5.0 University Instructors 6.0 Selected teachers, interns, and parents/community persons 7.0 DOE resource persons 8.0 Project Director 9.0 Other consultants 10.0 Secretarial personnel *Time* 1.0 Planning: three months 2.0 Implementation of plans: one semester 3.0 Follow-up monitoring: one to three hours per week *Materials* 1.0 Instruments 2.0 Schedules 3.0 Plans 4.0 Budget 5.0 Teaching/learning hardware/software 6.0 Office supplies 7.0 Telephone 8.0 Postage 9.0 Travel	*Human* 1.0 Project Director 2.0 Voluntary Teacher Planning Group 3.0 Program Development Specialist 4.0 Inservice Coordinator 5.0 Community Coordinator 6.0 Team Leader 7.0 School Administrator(s) *Time* 1.0 Planning sessions 2.0 Implementation of plans: 2.1 needs assessment 2.2 pre-test 2.3 workshop 2.4 post-test 2.5 evaluation of competence 2.6 individual conferences 2.7 follow-up activities *Materials* 1.0 Budget for carrying out inservice program (See Detail 4) 2.0 Schedules and timelines (See Detail 5)

Figure 2.2: Blueprint for the documentation of the Teacher Corps Youth Advocacy Program at Arizona State University

	CLIENT DEFINITION:	*STAFF DEFINITION:*	*MANAGEMENT DEFINITION:*
	Those persons, the Teacher Corps, Youth Advocacy Project Director and Program Specialist — National Teacher Corps, DHEW-OE, Washington, D.C. (Activity I) given the responsibility for making decisions about the Teacher Corps Youth Advocacy Program at Arizona State University.	Those persons (the Teacher Corps staff) given the responsibility for planning and implementing specific activities to aid in completing the documentation reports for the Teacher Corps Youth Advocacy Project at Arizona State University and the person (Administrative Assistant) responsible for providing the clients with the final documentation report.	The person (Administrative Assistant) responsible (1) for coordinating the project's monitoring and evaluation component, and the development and maintenance of a management information system, (2) for assigning and managing courses of action leading to the completion of documentation reports for program components, and(3) for providing the client with final documentation reports.
I N T E N T S	Given the final documentation reports for the Teacher Corps Youth Advocacy Program at Arizona State University, the Program Specialist and/or Director will make decisions: 1.0 as to the degree to which the program objectives for the project were met 2.0 to maintain, revise, or terminate the project as demonstrated by documentation of decisions made and actions taken based on the findings of the documentation reports.	Given the responsibility for planning and implementing specific activities assigned to complete the documentation reports for the project, the Teacher Corps staff will: 1) provide on a weekly, bimonthly, monthly, quarterly, or on an as needed basis all information (i.e., rationale, purpose, criteria, developed assessment instruments, collected data, outcome results, etc.) for all activities; 2) generate final reports as demonstrated by the development of the documentation reports that provides the information required to maintain the management information system; and 3) provide any other information required to select the decision alternatives. Given the responsibility for preparing final documentation reports for the client, the Administrative Assistant will: 1) collect data from Teacher Corps staff 2) analyze and compile data 3) prepare final documentation reports based on the compilation of the above information.	Given the responsibility for assigning and managing courses of action leading to the documentation of program components, workshops, and conferences; and for developing and maintaining a management information system, the evaluation coordinator will (1) assist in the development of a blueprint for the program, (2) assist in the identification of the decision situations to be served by documentation, (3) assign and manage courses of action leading to the completion of the documentation reports, and (4) ensure that the client is provided with final documentation reports, as demonstrated by the completion of a documentation reporting system according to the data collection time schedule specified.
M E T H O D S	1.0 Design for serving the decision situations 1.1 Meet with management to identify the decision situation to be served: the degree to which the project objectives were met. (See Detail A) 1.2 Identification of the decision alternatives: to maintain, revise, or terminate the project. 1.3 Identification of the decision making authority: project director and program specialist. 1.4 Meet with management to develop, validate, and weight the criteria to be used in selecting among decision alternatives. (See Detail B) 1.5 Meet with management to state the decision rules governing the conditions under which any decision alternative will be chosen. (See Detail C) 1.6 Meet with management to establish a time table for reviewing the documentation reports and making decisions. (See Detail D) 2.0 Choose the decision alternative using the following process: (1) obtain relevant reports (See Staff Detail 6), (2) use criteria to rate information regarding the degree to which the program objectives were used (See Detail B), (3) apply the decision rules (See Detail C), (4) reflect on the validity of the indicated choice, (5) confirm indicated choice and terminate the decision making process or reject the initial choice and recycle the decision making process. 3.0 Act upon the chosen alternative and with management document the action taken. (See Detail E)	*Each coordinator will:* 1.0 develop, utilize, and submit a document using the CBTE format for each program activity planned and implemented. (See Detail 1) 2.0 develop, utilize and submit assessment instruments and/or competency continua to measure desired outcomes. (See Detail 2) 3.0 collect, summarize, and make a final report of information according to the MIS data collection schedules (weekly, bimonthly, monthly, quarterly, or on an as needed basis). (See Detail 3) 4.0 report in writing any other information required to select the decision alternatives. (See Detail 4) *The Administrative Assistant will:* 1.0 collect data from coordinators 2.0 analyze and compile data (See Detail 5) 3.0 prepare final reports (See Detail 6) 4.0 provide the client with final documentation reports	*The Administrative Assistant will:* 1.0 meet with client to identify the specific decision situations (project objectives) to be served 2.0 establish and maintain Management Information System (MIS) 3.0 describe, in manual format, MIS 4.0 manage documentation procedures of staff 5.0 provide documentation reports to client according to specified schedule 6.0 meet with client to develop, validate and weigh the criteria to be used in selecting among decision alternatives 7.0 meet with client to establish decision rules governing the conditions under which decision alternatives will be chosen 9.0 meet with client to specify a time table for reviewing documentation reports and making decisions 10.0 document the decisions made and actions taken by the client (See Detail I for documents describing specific management activities and functions)
R E S O U R C E S	*Human* 1.0 Teacher Corps Youth Advocacy Project Director and Program Specialist 2.0 Administrative Assistant 3.0 Secretarial 4.0 Evaluative Consultants *Time* 1.0 Decision making time table (See Detail D) 2.0 Time table for documenting decisions made and actions taken (See Detail E) *Material* 1.0 Budget for accomplishing client methods (See Detail F) 2.0 Documentation reports (See Staff Detail 6) 3.0 Budget reports (2) (See Detail G) 3.1 Arizona State University (IHE) 3.2 Phoenix Union High School (LEA)	*Human* 1.0 Program evaluation contact person (Administrative Assistant) 2.0 Teacher Corps Youth Advocacy Staff 3.0 Director 4.0 Interns (4) 5.0 Consultants 6.0 Secretary *Time* 1.0 Data collection schedule that allows ample time for reporting (i.e., completing a rough draft, interviewing, revising, and constructing a final documentation report). (See Detail 7); 2.0 Time for interaction with program evaluation contact person (Administrative Assistant), Project Director and/or Consultants. *Material* 1.0 Any documents (e.g. CBTE formats, teacher competencies, intern competencies, workshop activities, various meeting minutes, needs assessment plan, etc.) related to the goal under investigation. 2.0 Budget for program evaluation contact person to complete the documentation report. (See Detail 8) 3.0 Decision situations to be served by the documentation reports.	*Human* 1.0 Administrative Assistant 2.0 Two Consultants 3.0 Project Director 4.0 Loop Liaison Officer 5.0 Graduate Assistants 6.0 Program Specialist 7.0 Secretary *Time* 1.0 Time line for implementing management methods (See Detail II) 2.0 Time line for managing staff methods (See Detail III) 3.0 Time line for accomplishing client goals (See Detail IV) (Time lines include a description of management responsibility regarding each aspect of the documentation process) *Material* 1.0 Documents describing activities and functions (See Detail I) 2.0 Budget for program contact person (Administrative Assistant) for the necessary materials and equipment to accomplish management methods. (See Detail V)